

# FIRST AID

# Introduction:

- A person who gives treatment for the one suffering from a disease or an accident, to improve his condition is called an” **aides**” and the medical treatment given as aid is called “first aid”
- If an accident happens in the workplace, you cannot be a helpless witness, since simply standing by can potentially worsens the situation. This is why it’s important to have at least a basic knowledge of first aid.
- At its most basic, first aid is the **initial assistance** given to a victim of injury or illness. Comprised of relatively simple techniques that can be performed with rudimentary equipment, first aid is usually carried out by a layperson until professional medical assistance arrives.

# Definition of first aid:

- First aid is the provision of **immediate care** to a victim with an injury or illness, usually effected by a **lay person**, and performed within a **limited skill range**.
- First aid is normally performed until the injury or illness is **satisfactorily dealt** with (such as in the case of small cuts, minor bruises, and blisters) or until the next level of care, such as a paramedic or doctor, arrives
- First aid is an emergency aid or treatment given to someone injured, suddenly ill, etc., before **regular medical services** arrive or can be reached.

# Objectives of first aid/guiding principle:

- The key guiding principles and purpose of first aid, is often given in the mnemonic "**3 Ps**". These three points govern all the actions undertaken by a first aider.
- **Prevent** further injury
- **Preserve** life
- **Promote** recovery

# Importance of first aid:

The importance of first aid is hard to overestimate.

Among the major benefits of first aid are the following:

- Providing **quick** medical treatment until professional assistance arrives.
- First aid helps ensure that the **right methods** of administering **medical assistance** are provided.
- **Knowledge** in first aid also **benefits** the individuals themselves.
- It **affords** people with the **ability** to provide help during various emergency situations.

# Principles of emergency care:

- Collect the **detailed history** of accident either from the victim or from anyone who has witnessed the accident.
- The victim's injury should be **examined** thoroughly, taking note of every symptom, to know the correct diagnosis.
- By the help of the diagnosis, **treat the victim** until the doctor arrives or shift the victim to the hospital and aid the patient during transport.
- **Call the doctors** or shift the victim to the hospital as soon as possible, so that the patient can recover soon from doctor's treatment instead of prolonging the first aid.

# **FIRST AID IN EMERGENCIES**

# Suffocation by Poisonous Gases:

**Definition:** suffocation occurs when no air enters the rooms and to the nose and the room is a confined space where all the oxygen is used up like caves, holes and wells without water.

1. **Carbon Monoxide** (lighter than air): This gas is present in car-exhaust fumes, in household coal gas: during incomplete combustion of charcoal stoves and in coal mines.

## **Management:**

- The first aid treatment consists in removing the person from the area, applying artificial respiration and giving pure oxygen, if available.
- Ensure circulation of fresh air before entering the room by opening the doors and windows.
- Before entering the enclosed space take two or three deep breaths and hold your breath as long as you can.
- Crawl along the floor (as the gas is lighter than air)
- Remove the casualty as quickly as possible to fresh air.
- Loosen his clothes at neck and waist and give artificial respiration, if asphyxiated.



# Suffocation by Poisonous Gases:

2. **Carbon-dioxide** and other (heavier than air): This gas is found in coal mines, deep unused wells and sewers. Various other gases such as leaking refrigerator gases; compressed gases used for cooking and lighting may also cause suffocation.

## Management

- Observe all the precautions mentioned above.
- Enter in an upright position (as the gas is heavier than air and collects near the floor)
- Remove the casualty as quickly as possible to fresh air.
- Wherever ventilation is not possible and deadly poisonous gas is suspected, use a gas mask to protect yourself.

# Suffocation by Poisonous Gases:

## 3. Suffocation by smoke

- **Management:**
- Protect yourself by a towel or a cloth (preferably wet) over your mouth and nose.
- Keep low and remove the casualty as quickly as possible away from the area.

# Shock:

- **Definition:** Poor circulation to the vital organs. Shock is very serious and life threatening. The casualty may not know that they are in shock.
- **Causes:** Dilated blood vessels, bleeding, severe dehydration, all leading to a drop in blood pressure, which results in poor circulation. These can be caused by severe emotional trauma, physical injury, illness, etc.
- **Signs/Symptoms:**
  - Unusual behavior (e.g. Very calm or very anxious),
  - Lack of pain to an injury
  - Rapid breathing
  - Rapid but weak pulse
  - Bluish skin (cyanosis)
  - Unconsciousness.
- **Management:**
  - Activate the ambulance right away.
  - Assist the person to lie on their side to improve circulation, treat any injuries, help them take any medication for an illness.

# Broken bones and fractures

- **Definition:** A break or crack in a bone is called a fracture.
- In most cases the damage to the bone will be under the skin, which is called a closed fracture,
- But sometimes bits of the bone can puncture through the skin to become an open fracture.
- In both cases you'll need to treat the casualty for [shock](#).
- Even if you can't see any blood, the break might have caused some internal bleeding.
- To break a fully grown bone, a huge amount of force is needed
- But bones that are still growing are supple and can split, crack or bend quite easily, a bit like a twig.

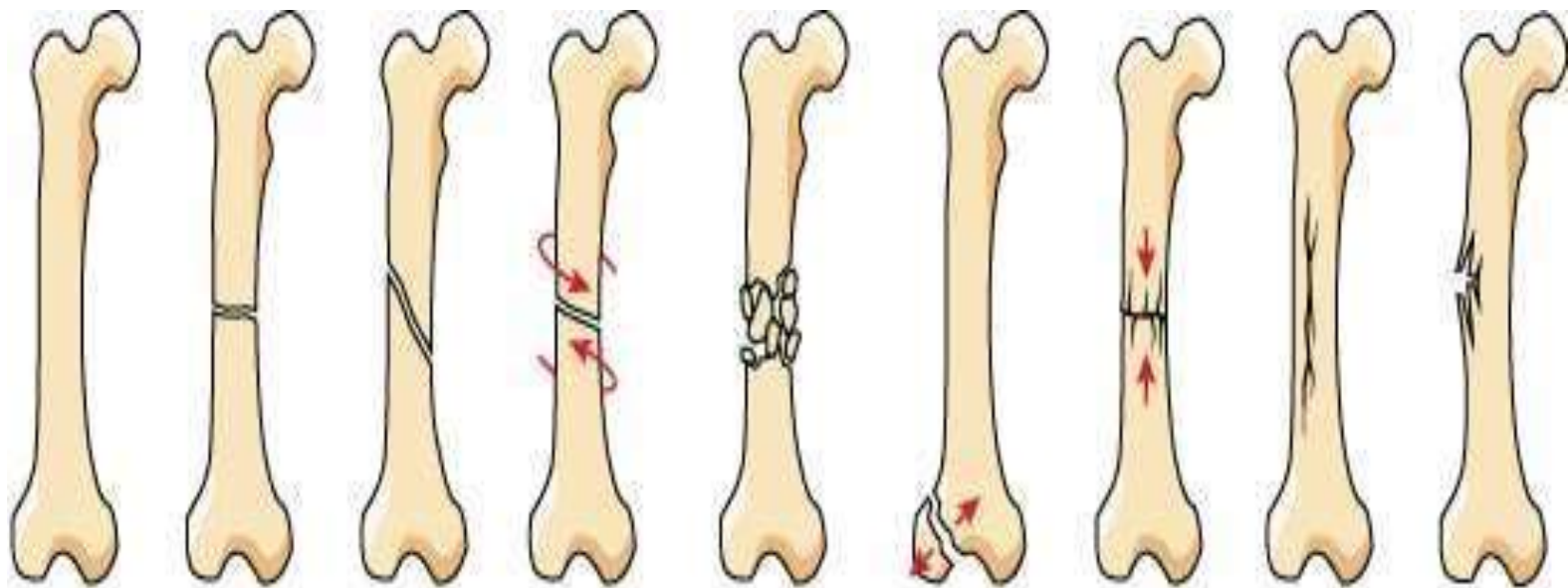
# Fracture

## Signs:

- The seven things to look for are:
- Swelling
- Difficulty moving
- Movement in an unnatural direction
- A limb that looks shorter, twisted or bent
- A grating noise or feeling
- Loss of strength
- Shock

# Types of fracture:

- **Green stick fractures:** Closed fracture mostly it occurs in children..
- **Complicated fractures:** They occur when the jagged ends of the bone fragments damage blood vessels, nerves or a joint, broken bones in the chest may penetrate the lung, heart or liver. In fractures of the skull the brain is usually damaged.
- **Depressed fractures:** These occur in the skull when the broken ends of the bones are pressed inwards.
- **Comminuted Fractures:** In these cases, the bone is broken into several fragments. This is serious because there will be muscle damage with more bleeding at the fracture site.



Normal

Transverse

Oblique

Spiral

Comminuted

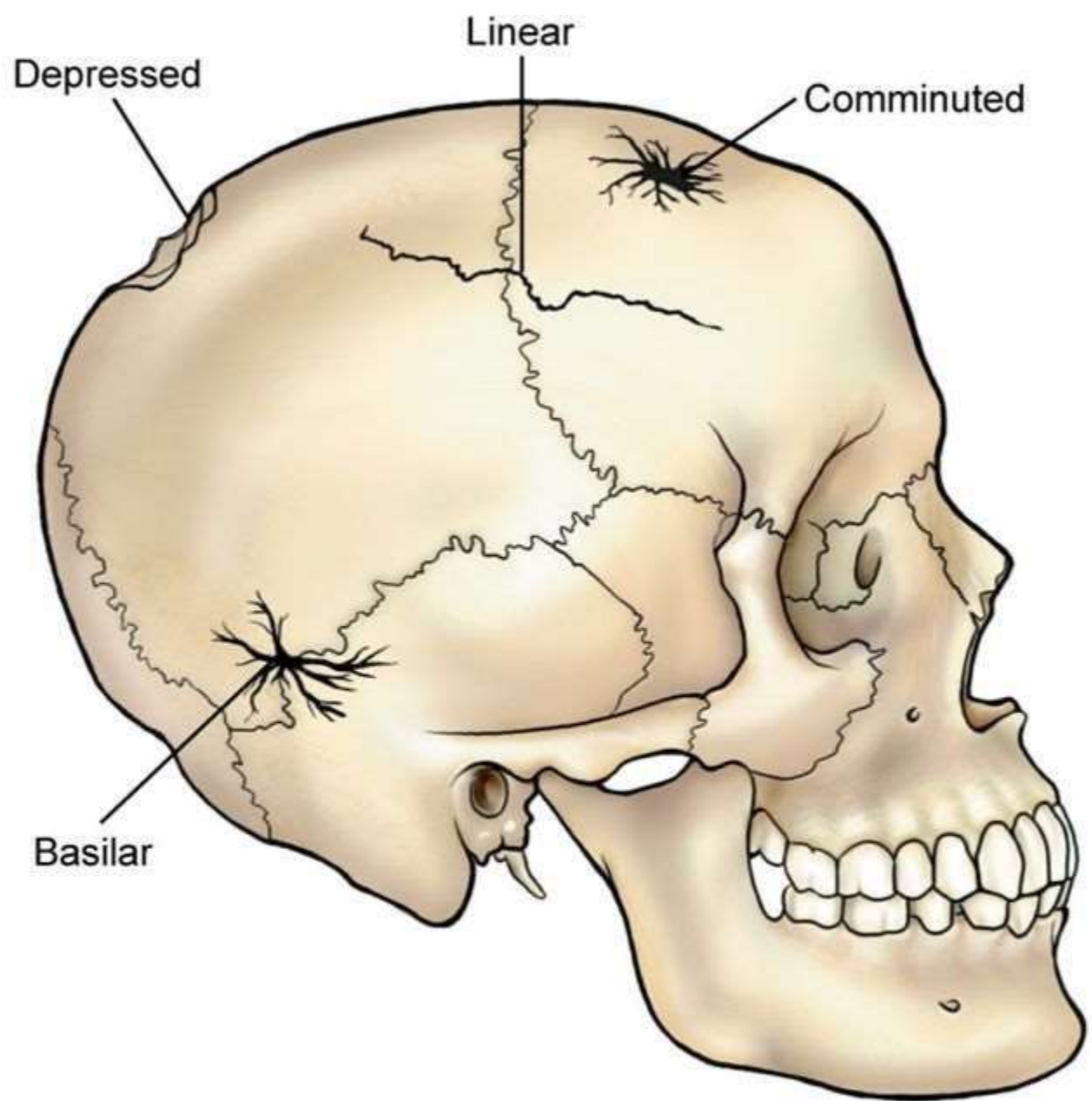
Avulsion

Impacted

Fissure

Greenstick

# Types of skull fractures



(From Monahan, F., & Neighbors, M. [1998]. *Medical-surgical nursing: Foundations for clinical practice* [2nd ed.]. Philadelphia: Saunders.)

Fig. 56-26. Skull fractures.



# Types of fracture:

- **Impacted Fractures:** After a heavy fall, the fracture may be impacted by the force, (eg.) Spinal injury falling from tree.
- **Pathological Fractures:** These occur when the bone is weakened by loss of calcium, infection or cancer. Minimal cause a break in such cases. In old age the bones are more brittle, and may break spontaneously due to calcium loss which is part of the ageing process.
- **Stress Fractures:** Stress caused by repeated minor trauma as in athletic training. Involved in strenuous training, such as jogging or marathon running.

# Management:

- If it is an open fracture, **cover** the **wound** with a sterile dressing and secure it with a **bandage**. **Apply pressure** around the wound to control any bleeding.
- **Support** the injured body part to stop it from moving. This should ease any pain and **prevent** any further **damage**.
- Once you've done this, call medical help. While waiting for help to arrive, **don't move** them unless they're in immediate danger.
- **Protect** the injured area by using **bandages** to secure it to an **uninjured part** of the body to stop it from moving. For example, fractures on the arm can be secured with a sling, and a leg with a fracture can be tied to the uninjured leg.
- Keep checking the casualty for signs of **shock**. This does not mean emotional shock, but is a life-threatening condition, often caused by losing blood.
- If they lose responsiveness at any point, open their airway, check their breathing and prepare to treat someone who's become **unresponsive**.

### 3. Stroke (most serious) :

**Heatstroke** is a condition caused by your body overheating, usually as a result of prolonged exposure to or physical exertion in high temperatures. This most serious form of **heat** injury, **heatstroke** can occur if your body temperature rises to 104 F (40 C) or higher. **Heatstroke** requires emergency treatment.

s/s

- -Elevated body temperature.
- -Very tired/weak.
- -Sweating may stop - this is not a good sign.
- -Severe headache.
- -Red hot dry skin.
- -Rapid, weak pulse becoming irregular, rapid breathing, or reduced/absent vital signs (consciousness, breathing, pulse).

## Treatment:

- Remove from heat source.
- Place in recovery position.
- Call for an ambulance.
- Monitor/treat ABCs.
- Remove sweaty clothing.
- Fan or gently cool the skin with cool towels or ice packs.
- Do not douse with cold water.
- At this point it is too late to give fluids by mouth and it may induce vomiting.

# Stroke

## Stroke:

The sudden death of brain cells due to lack of oxygen, caused by blockage of blood flow or rupture of an artery to the brain. Sudden loss of speech, weakness, or paralysis of one side of the body can be symptoms.

The medical term for stroke is **cerebrovascular accident**, or CVA.

- Thrombotic/ ischemic stroke (caused by blood clots)
- hemorrhagic stroke (caused by ruptured blood vessels that cause brain bleeding)
- transient ischemic attack (TIA) (a “mini-stroke,” caused by a temporary blood clot)
- Embolic stroke – When a blood clot forms in another part of the body and moves to the brain.

## Signs/symptoms:

- Numbness, tingling, paralysis on one side of the body, extremities, hands, and feet.
- Slurred speech, not making sense.
- Trouble understanding you.
- Uneven pupils.
- Nausea or vomiting.
- Decreased level of consciousness.

## Management:

- Help them get in a comfortable position on their side, make sure they are resting.
- Activate the ambulance.
- Reassure them that help is on the way.
- Keep them warm with a blanket.
- Do not give them anything to eat or drink.

**Notes:** It is extremely common for people to ignore the warning signs of a stroke. Unfortunately, this is one reason why so many people die from this disease – because they don't get help soon enough. As a first responder, it is your job to activate the ambulance as soon as possible. Sometimes a stroke is called Cerebral Vascular Accident (CVA). Mini stroke is a condition where the casualty experiences similar warning signs as that of a stroke, but these warning signs go away on their own. This is a warning sign that a serious stroke may occur and the person needs medical help immediately. This condition is sometimes called Transient Ischemic Attack (TIA).

# Burns

**Definition:** A burn is damage to the skin or underlying tissue caused by heat. There are 3 levels of severity; 1st (Superficial), 2nd (Partial thickness), 3rd (Full thickness).

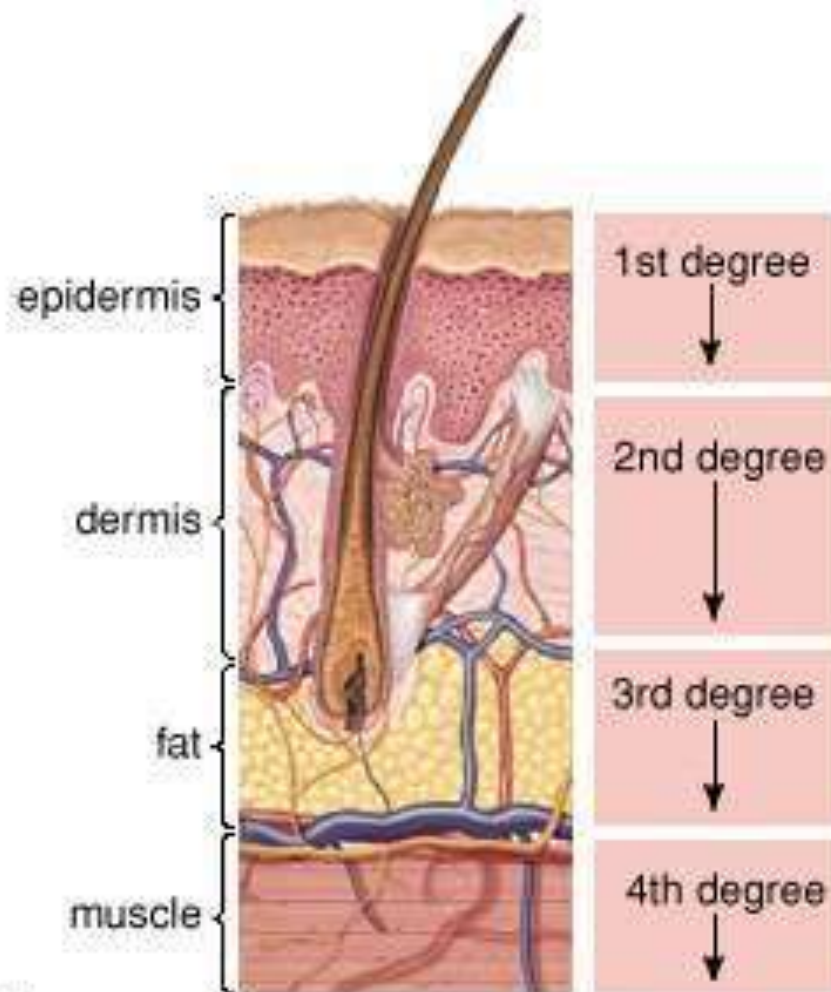
**Causes:** There are 5 main sources of burns;

- Electricity,
- Radiation (sun),
- Thermal (something hot),
- Chemical,
- Friction

**Prevention:**

- Use safety rules.
- Use safety equipment when working with chemicals.
- Hire professionals for work dealing with e.g. electricity.
- Avoid sun exposure.
- Keep hot objects away from children.





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## Management:

- For 1st and 2nd degree burns you should cool the area immediately with gently running cold water for about 10-15 minutes, or until it has cooled off. Do not break any blisters as this will make the wound worse.
- For 3rd degree burns do not put anything on the burn, seek medical help immediately and treat for shock. 3rd degree is extremely life threatening even when a small body part is affected. If there is clothing on the burn do not remove it as this may also remove skin. There is a very high risk of infection from this kind of burn.

## Notes:

- As with all other emergencies make sure the area is safe for you first. Watch out for live wires, hot objects, chemical spills, etc.
- The severity of a burn can also be increased depending on; Which part of the body is affected, e.g. face, and neck.
- The amount of the body that is burnt, e.g. only fingertip or entire arm.
- With electrical burns check for an exit wound as well as treating for the entrance wound.
- With chemical burns flush the area with lots of water to get it off the casualty's skin.
- Never apply ointments, butter, or other home remedies on burns, as this may make the burn worse, keep the heat trapped in, or cause an infection.

## Management:

- Make sure the ambulance has been called.
- Make the mother comfortable on her back. Remove any necessary clothing but keep her covered to protect her privacy. Put some clean towels under her.
- As a rescuer all you have to do is support the baby as it comes out. Hold the head as it is heavy compared to the rest of the baby.
- As soon as you can see the baby's throat make sure the umbilical cord is not wrapped around it. If it is use your finger to loosen it and pass it over the head. This is easy to do.
- Once the baby comes out wrap it in a clean towel.
- Clean its mouth and nose.
- If it is not breathing massage its back and tickle its feet. This should help stimulate the breathing mechanism.
- If it is still not breathing begin rescue breathing and CPR.
- Never hold the baby upside down and slap it. This is a TV thing, and if you should drop the baby you'll be in trouble.
- If the baby is fine give it to the mother to hold.
- The other end of the umbilical cord will be attached to the placenta which will still be inside the mother. Do not pull, it will come out on its own in a few minutes in another set of contractions.
- Do not cut the cord. Simply wrap the placenta in a towel and keep with the baby.
- Never put the placenta lower than the baby as blood may drain from the baby back into the placenta. If you wish you may tie something around the umbilical cord a few centimeters away from the baby and from the placenta. But do not cut it.
- If the baby begins to come out feet first it is a complication but there is nothing you can do. Instruct the mother not to push. Do not try to push the baby back in. Simply support it any way it comes out.

# Heart Attack

- Definition: When something goes wrong with the heart's electrical system, or when an artery in the heart muscle ruptures or becomes blocked. Regardless, the heart is no longer able to circulate blood effectively, including to its own tissues. As a result, the heart may stop working.
- Signs/Symptoms:
  - Pain/tightness/numbness in the shoulders, arms, neck, back, chest.
  - Bluish, pale skin.
  - Rapid but weak pulse.
  - Shallow rapid breathing.
  - Nausea or vomiting.
  - Unconsciousness.
- These warning signs may come and go, and maybe severe or mild. Even if the warning signs go away this person may still be having a heart attack and still needs immediate help.

- Management:
- Help them get in a comfortable position, make sure they are resting.
- Activate the ambulance.
- Reassure them that help is on the way.
- Check for medical history of a similar problem, as they may have medication (but only assist, do not administer medication).
- If they have Angina (see following page).
- If they wish, they may take one Bayer Aspirin, as this may prevent further damage to the heart muscle. Note, if they have asthma they may be allergic to aspirin – ask first!
- Do not give them anything to eat or drink.
- Stay with them all the time and comfort them.
- Notes: It is extremely common for people to ignore the warning signs of a heart attack. Unfortunately, this is one reason why so many people die from this disease – because they don't get help soon enough. As a first aider it is your job to activate the ambulance as soon as possible.

# Angina

- Definition: Angina is a serious medical condition, diagnosed by a cardiologist, where the coronary arteries are partially blocked. As a result, when under stress, the heart is not able to get enough blood and cannot work properly.
- Sign/Symptoms: The most common warning sign is pain, but it can also include any of the other warning signs for heart attack.
- If the casualty says they have angina they should also have medication with them. You can help them take it (e.g. get the bottle, open the bottle, put the pill in their hand) but they must do the actual administering.
- Management: This medication is called nitroglycerine. It is designed to cause blood vessel dilation, which means it causes the blood vessels to relax so they expand. As a result, more blood can flow through.
- Viagra does not cure heart disease. It does not dissolve blood clots, it simply enlarges blood vessels temporarily.

- Nitroglycerine comes in 4 forms:
  - Pill: which they must place under their tongue for quick absorption. If they swallow the pill it will take much longer to be absorbed.
  - Spray: like a puffer, which they spray into their mouth.
  - Paste: which they put on their skin.
  - Patch: which they wear all day.
- The most they should take is 3 doses, 3 minutes apart each. If after 10 minutes they do not feel better, or they become worse at any time then it means the medication is not working and this person needs advance medical help immediately.



# Cardiopulmonary resuscitation:

- **Airway:**
- Place them on their back, carefully so as to not cause any injury.
- Open their airway by tilting their head back and lifting their chin upwards. This will remove the tongue from blocking the airway.
- Keep the airway open.
- **Breathing:**
- Check for Breathing by looking, listening, and feeling for air (10 seconds).
- If they are breathing then monitor and put them in the recovery position until the paramedics arrive.
- If they are not breathing give them 2 breaths, allowing the air to come out in between.
- If the air goes in then go to “Circulation.”
- If the air does not go in, re-position the head-tilt/chin-lift a bit further back and try blowing again. Be careful not to injure their neck.
- If the air still does not go in then go to “Circulation” but check the mouth for the food after doing CPR.

- **Circulation:**

- Start CPR if needed (compressions and breaths).
- It is 30 compressions to 2 breaths. Continue until paramedics arrive or until something changes with the person (reassess at this point).
- If the air was not going in make sure you check the mouth, to see if the food came out, after each set of compressions. If you see the object in their mouth take it out and reassess breathing.
- Under this category, we are also concerned with shock and severe bleeding.

- **About compressions:**
  - Adult: use both hands. Compress 4-5 cm deep.
  - Child: use one hand. Compress almost half way down.
  - Infant: use two fingers. Compress almost halfway down.
  - Fast and smooth.
  - Do not stop unless something changes.
  - Ribs may break, keep going.
  - If they vomit roll them onto their side, clean their mouth, continue.
- **Two-Rescuer CPR:** In a situation where there are 2 trained first aiders, and they work well together, one rescuer can perform the compressions while the other rescuer gives the breaths. All the steps are the same, nothing changes. This is a bit more sufficient and less tiring for the rescuers. If the rescuer doing the compressions becomes tired they can switch positions.

# Poisoning:

- **Definition:** A poison is a substance which enters the body and can cause illness or death. It may act within a matter of seconds (e.g. carbon monoxide) or a matter of years (e.g. car pollution). There are four basic ways in which poison can enter the body; by swallowing, breathing, injecting, or absorbing. Any of these methods can be life threatening. Many times children are the innocent casualties.

# Four Routes of Poisoning

## INHALATION



## INJECTION

Drugs



## INGESTION



## ABSORPTION

Household  
Cleaners





## Ingested Poisons:

- Examples can include bad food, household cleaners, perfumes, nail polish remover, etc.
- If the person is having trouble breathing, is convulsing, is unconscious, or is in pain, call the ambulance immediately.
- If the person appears to be fine but you want to make sure **call your doctor or local hospital.**
- For your area this number can be found at the front of your local telephone directory. In order for them to help you they need to know what the person took, how much, their age and weight, and their present condition. They will either tell you to seek medical help immediately, give them something to drink, or to monitor them to make sure they don't get worse.
- Make sure you do **not induce vomiting** unless you are told to do so by a physician as some substances are corrosive and may burn on the way up.
- Also, do not give anything to drink unless instructed by a physician as some substances may react more with liquids.
- Always keep cleaners and **chemicals high up so children** can not access them.





## Breathed/Inhaled Poisons:

- This can include fumes from household cleaners, industrial products, smoke, etc.
- Fresh air is the immediate first aid treatment.
- But first make sure you are not putting yourself in danger. Seek medical help for the person immediately.
- Never mix cleaners unless it specifies on the container. Never use chemicals in poorly ventilated areas.
- Be aware of carbon monoxide as it can not be smelled, has no taste, and can not be seen. It can be produced by any engine (e.g. house furnace, car), or even a fireplace with poor ventilation.
- Every home should have a carbon monoxide detector. If the detector begins to sound you need to leave the house immediately and call the fire department from the neighbor's house.
- Carbon monoxide poisoning makes you feel sleepy and drowsy and can have an effect in a matter of minutes so you aren't aware of what is happening.



## Injected Poisons:

- Some examples include **needles, broken glass, mosquitoes, spider bites, bee stings, etc.**
- As soon as possible remove the object from the skin. Clean the area thoroughly with soap and water.
- If an allergic reaction occurs, or you believe there is a risk of infection, seek medical help.

## Absorbed Poisons:

- These are poisons which enter the body through the skin, but do not cause a puncture. Some examples are household cleaners, industrial products, poisonous plants, etc.
- Remove the substance as soon as possible by using large amounts of running water.
- Do your best not to contaminate other body parts.
- There are some chemicals that will react more with water, but if you leave them on the skin they will react anyway with skin moisture.
- Seek medical help. If you work with chemicals make sure you know how to do the job safely and always use safety equipment.

- **Common household poisons that can harm babies and children:**
- Nail polish and nail polish remover.
- Lipstick and lip gloss.
- Mascara.
- Medication including: Panadol, Tylenol, Aspirin.
- Vitamins or other supplements.
- Cleaning supplies: e.g. bleach.
- Aerosols and other insect repellents.
- Poisons used for insect and pest control.
- Soaps: dishes, hands, clothes, etc.
- Smoke from smoking.

# Bites and stings:

**Signs/Symptoms:** Wound (animal or human bite) or swelling and pain (insect sting).

## **Treatment:**

- For animal and human bites, cleanse wound with soap and water and apply iodine containing antiseptic; submit animal for rabies test.
- Prevent exertion and taking of stimulants by victim. For insect stings apply cortisone ointments, soothing lotions, or cool compress.
- Persons who are allergic to insect stings should carry adrenaline with them at all times.

